A NEW SPECIES OF *MESODINA* MEYRICK (LEPIDOPTERA: HESPERIIDAE) FROM WESTERN AUSTRALIA

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Abstract

Mesodina hayi sp. n. is described from southern Western Australia. Adults and the male and female genitalia are figured and characters to distinguish *M. hayi* from *M. cyanophracta* Lower are listed. The number of subapical spots in *M. gracillima* Edwards is discussed and a key to the species of *Mesodina* Meyrick provided.

Introduction

The genus *Mesodina* Meyrick was reviewed by Edwards (1987), who presented evidence that *M. cyanophracta* Lower, until then regarded as a subspecies of *M. halyzia* (Hewitson), should be regarded as a separate species. At that time *M. cyanophracta* was the only species of *Mesodina* known from southern Western Australia.

In October 1987 one of us (AJG) captured a pair of skippers at Quairading, 150 km E of Perth, W. A. which could not be identified. They were believed to represent an undescribed species but their relationship to other Hesperiidae was not known. Independently, in November 1992 the other author (EDE) with E.S. Nielsen took four specimens also at Quairading. With the commencement of a project in 1994 to revise Common & Waterhouse (1981), these specimens were examined and proved to be a hitherto unrecognised species of *Mesodina*.

Key to the species of *Mesodina* Meyrick

1. Cream spots of fore wing with upstanding scales (Figs 13, 14) 2
   Cream or yellow spot(s) of fore wing with scales flattened to wing (Figs 15, 16) 4
2. Male fore wing upperside almost always without subapical spots ..... *halyzia* (Hewitson)
   Male fore wing upperside almost always with three subapical spots 3
3. Underside of hind wing reddish grey ..... *gracillima* Edwards
   Underside of hind wing bluish grey ..... *cyanophracta* Lower
4. Underside of fore wing with large orange patch in cell ..... *aeluropis* Meyrick
   Underside of fore wing without large orange patch in cell ..... *hayi* sp. n.

Mesodina hayi sp. n.

(Figs 5-8, 10, 12)

Types. WESTERN AUSTRALIA: *Holotype* ♂, 32°01'S, 117°23'E, 2 km SW of Quairading, W.A., 2.xi.1992 E.D. Edwards, E.S. Nielsen (in Australian National Insect Collection). *Paratypes*: 2♂♂, 1♀, same data as holotype but 1♂ with ANIC slide 3424 and 1♀ with ANIC slide 3427 (in Australian National Insect Collection); 1♂, 1♀, Quairading, W.A. 18.x.87, A.J. Graham (in Western Australian Museum); 6♂♂, 1♀, 2 km SW Quairading, several pupae found near eastern side of Nature Reserve, No. 16405, A.A.E. Williams, 11, 21, 24.x. & 3.xi.1994 (in W.A. Department of Conservation and Land Management Collection).

Description

Male (Figs 5, 7)

Head grey with some black scales, antennal shaft black ringed with cream, apiculus blunt, black anteriorly, cream posteriorly, nudum 17 divisions; labial palpi grey above with some black scales, white to pale grey beneath. Thorax, legs, abdomen grey-black above, grey-white beneath. Fore wing costa almost straight, apex pointed, termen almost straight; above dark brown with scattered grey scales towards base of costa and a few yellow hair scales at base and along dorsum; cream spots variable in number, one, two or three very small, one at end of cell always present, one between M3 and CuA1 and one between CuA1 and CuA2 sometimes present, subapical spots always absent, cilia grey and brown; beneath brown, apical area grey, spots as upperside, yellow hair scales in cell. Hindwing rounded, above dark brown, some yellow hair scales towards base, cilia grey and brown; beneath grey, a spot at end of cell outlined in dark grey, an outer row of similar smaller spots, anal area paler grey, cilia grey, darker at ends of veins. Fore wing length 12-14 mm.

Genitalia (Fig. 10): combined tegumen and uncus long tapering, tip down pointed, gnathos with fine sparse spicules; valva with ampulla well developed with tapering rounded tip, harpe narrow, dorsal surface with toothed projection; saccus well developed; aedeagus slender.

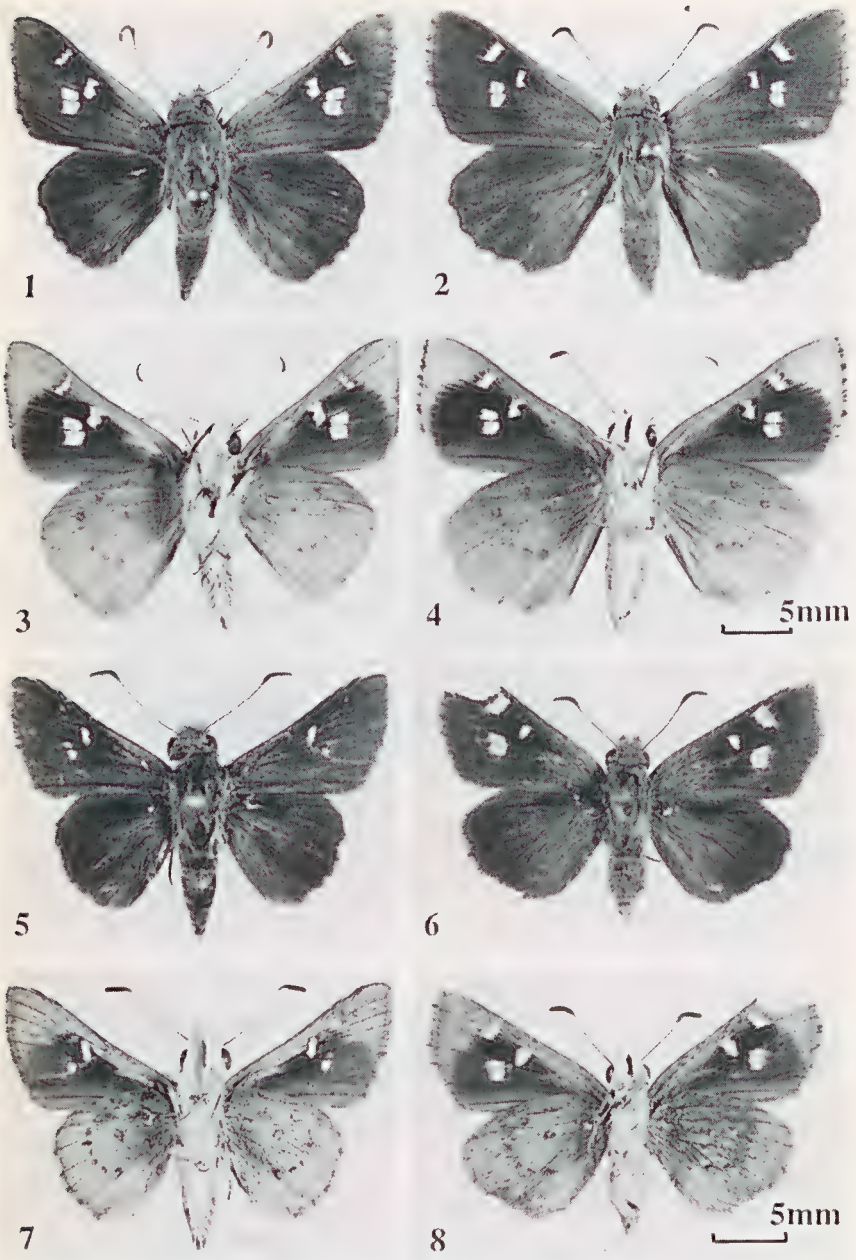
Female (Figs 6, 8)

Similar to male but fore wing with apex and termen more rounded, cream spots of fore wing larger and with three confluent subapical cream spots appearing as a single spot, distal margins of spots except cell spot ill-defined. Fore wing length 14-15 mm.

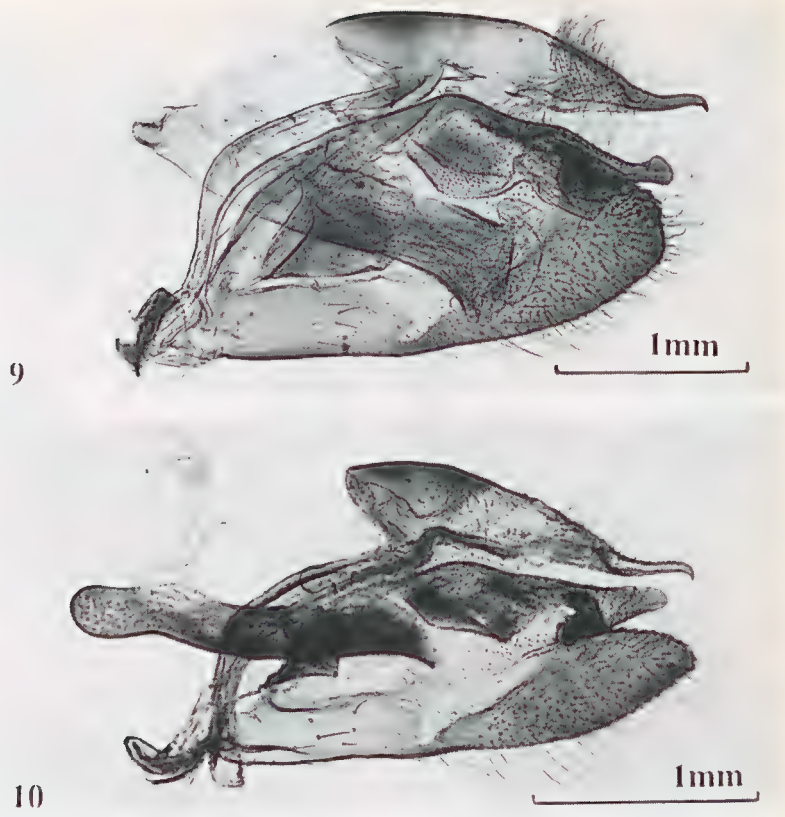
Genitalia (Fig. 12): sterigma lightly developed, corpus bursae with long narrow posterior section, accessory sac well developed.

Variation

The known specimens differ in size. In the male the fore wing cream cell spot is always present but all or some of the other spots may be absent.



Figs 1-8. *Mesodina* spp.: males odd numbers, females even numbers; upperside and underside; (1-4) *M. cyanophracta*; (5-8) *M. hayi*.



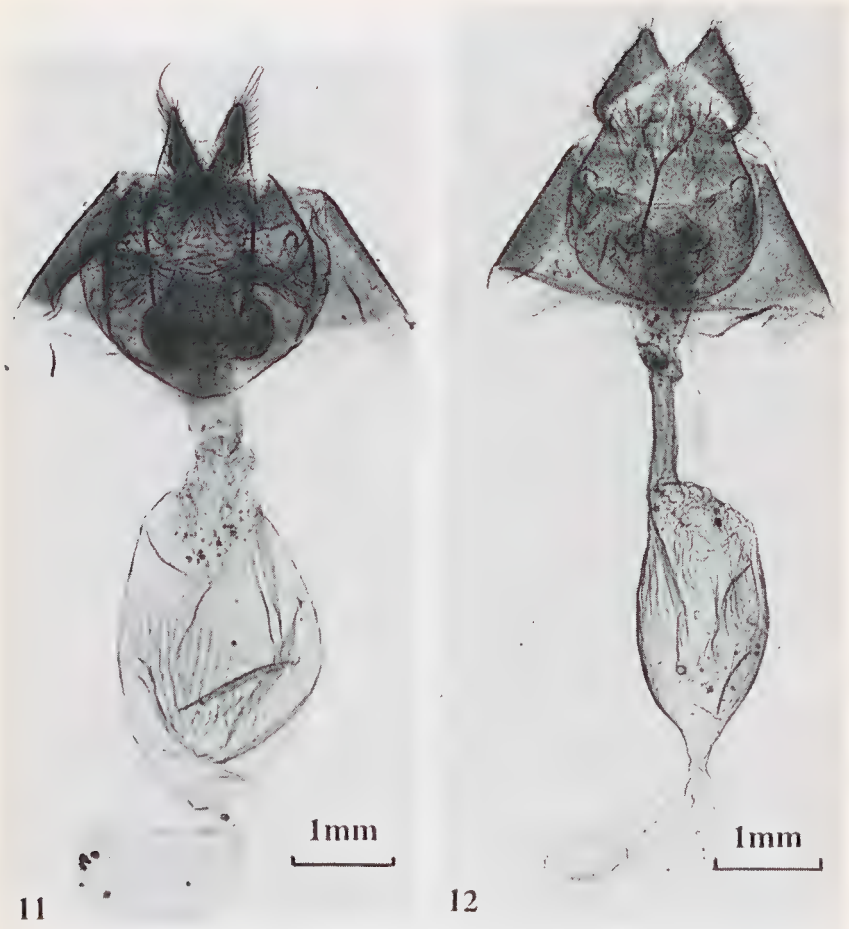
Figs 9,10. Male genitalia with left valva removed: (9) *M. cyanophracta* ANIC slide M572; (10) *M. hayi* ANIC slide 3424.

Distribution
The species is known only from the small area of native vegetation surrounding the town of Quairading, southern Western Australia.

Etymology
The species is named in honour of Mr R. W. Hay, whose efforts have kindled a resurgence of interest in the butterflies of Western Australia and who has provided generous assistance to both authors over many years.

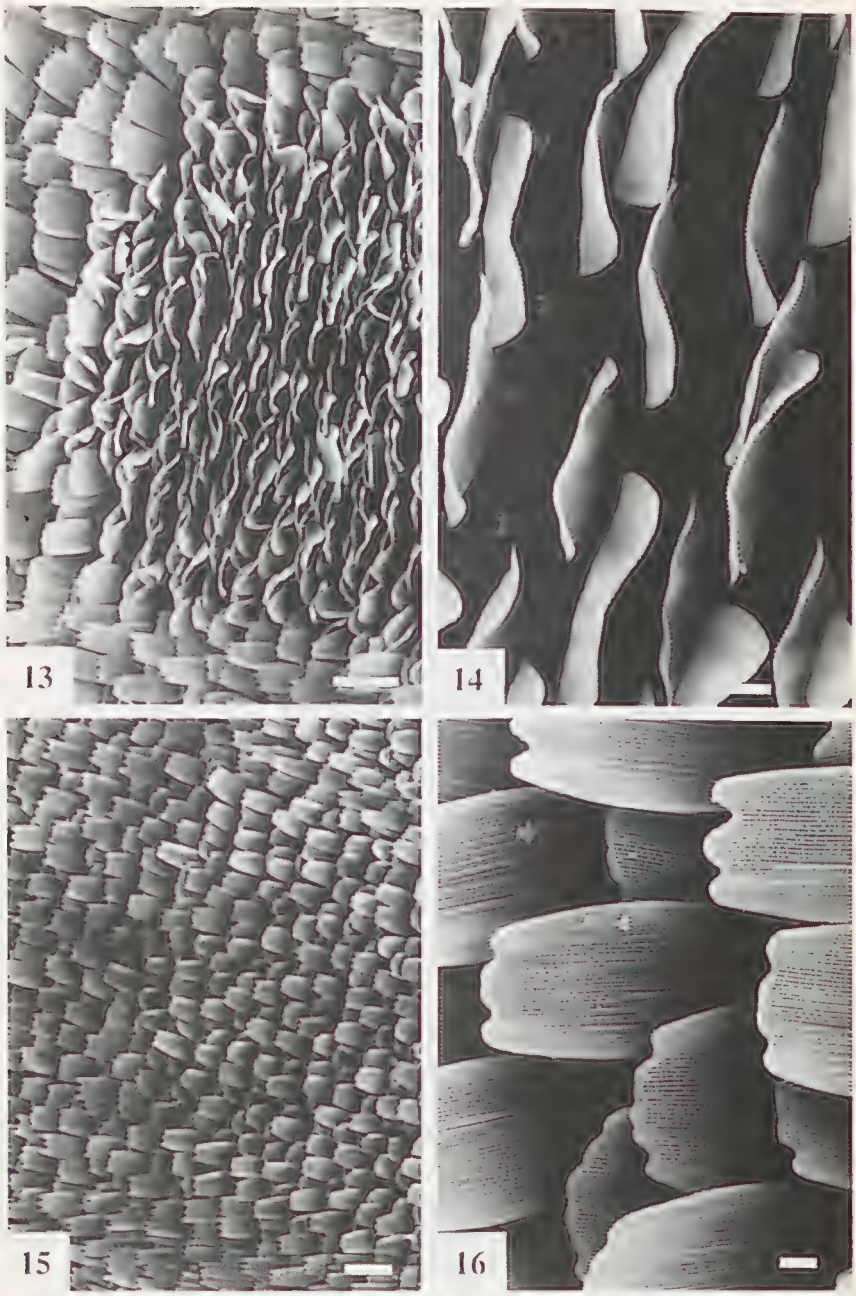
Discussion

Mesodina hayi posesses the normal characters of the genus, namely the long tapering combined uncus and tegumen, harpe with spined dorsal process, corpus bursae with accessory sac, absence of median spurs on the hind tibia and absence of a sex brand in the male. The origin of CuA1 is slightly closer to M3 than to CuA2 in the fore wing and it is much closer to M3 than to



Figs 11,12. Female genitalia: (11) *M. cyanophracta* ANIC slide M583; (12) *M. hayi* ANIC slide 3427.

CuA2 in the hind wing and in this *M. hayi* resembles the other species of *Mesodina*. The male and female genitalia have all the attributes of *Mesodina* and none of those of *Croitana* Waterhouse (Edwards, 1979). *M. hayi*, with a fore wing length of 12-14 mm, is smaller than *M. cyanophracta* which averages 15 mm. A few specimens of *M. cyanophracta* are as small as *M. hayi* but usually these may be distinguished by the three subapical spots present in *M. cyanophracta* and absent in *M. hayi*. Occasionally very small *M. cyanophracta* lack subapical spots. The grey underside of the hind wing of



M. hayi differs from the underside of *M. cyanophracta*. In *M. cyanophracta*,

M. hayi differs from the underside of *M. cyanophracta*. In *M. cyanophracta*, unless very worn, the hind wing underside has a bluish sheen and the spots are less distinct. The anal area in *M. cyanophracta* is pale brown without the bluish sheen but in *M. hayi* it is a paler grey. Another useful distinction is in the orientation of the wing scales of the cream spots. These spots are semihyaline in *M. cyanophracta* and light shines through them. Examination under a low power microscope reveals that the cream scales are erect (Figs 13, 14). This is also true of *M. gracillima* Edwards and *M. halyzia* (Hewitson). These erect scales are visible even in specimens of *M. cyanophracta* with the smallest spots. In contrast these scales in *M. aeluropis* Meyrick and *M. hayi* are not erect but flattened tile-like against the wing membrane in the normal way (Figs 15, 16) and the spots are almost opaque. Semihyaline spots composed of erect scales are found widely in the Trapezitinae and Hesperiinae and no special significance should be attached to their presence or absence but here they are useful in distinguishing the species.

In the male genitalia (Fig. 10) of *M. hayi* the tegumen-uncus has a longer tip but does not project beyond the apex of the valva, the ampulla is narrower and less rounded at the tip and the harpe is tapering and rounded without the expanded tip characteristic of *M. cyanophracta* (Fig. 9). The aedeagus of *M. hayi* is narrower than that of *M. cyanophracta*.

In the female genitalia (Fig. 12) the sterigma are arranged differently and the corpus bursae of *M. hayi* has a long narrow posterior section unlike the shorter, broader posterior section of *M. cyanophracta* (Fig. 11).

M. hayi is known only from Quairading but it possibly once had a more extensive range in the now cleared wheat belt of W.A. The distribution of *M. cyanophracta* is incompletely known. Common and Waterhouse (1981) gave a coastal and subcoastal distribution from Geraldton to the Stirling Ranges and more recently Dunn and Dunn (1991) recorded it from 36 km W of Binnu (28°02'S) to Albany and the Stirling Ranges. There are more recent specimens collected by EDE and E.S. Nielsen from near Kalbarri (27°41'S) and from the southern coast as far east as Esperance. However in the latitude of Perth the species' eastern limit is not well known but it occurs in the Darling Range and the coastal plain. We know of no specimens of *M. cyanophracta* from the Quairading area. Waterhouse and Lyell (1914) recorded a specimen of *M. cyanophracta* from Kellerberrin, 50 km NE of Quairading. There is a specimen in the Western Australian Museum labelled "Kellerberrin Nov. 1912 6403" which is probably that referred to by Waterhouse and Lyell. The register records that it was donated by L. McK. Burns. It is a specimen of *M. cyanophracta*. Further work is needed to determine if the two species are sympatric.

Figs 13-16. Wing showing margins of cream spots (13,15) and scales of spot (14,16): (13,14) *M. cyanophracta*; (15,16) *M. aeluropis*. Scale bars: (13,15) 100 microns; (14,16) 10 microns.

The biology of *M. hayi* has recently been discovered at Quairading and will be published by Williams and Atkins (in prep.).

Only two males of *M. gracillima* were known when it was described by Edwards (1987) and the normal number of subapical spots was in doubt. Since then many specimens have been taken and most of these have three subapical spots but occasionally specimens have none, one or two.

Acknowledgments

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